



**State of New Jersey**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**DIVISION OF HAZARDOUS SITE MITIGATION**  
401 E. State St., CN 413, Trenton, NJ. 08625-0413  
(609) 984-2902  
Fax # (609) 633-2360

Anthony J. Farro  
Director

14 DEC 1988

Mr. Fred Cataneo  
U. S. Environmental Protection Agency  
26 Federal Plaza, Room 759  
New York, NY 10278

RE: COMMENTS ON THE VINELAND CHEMICAL COMPANY  
SITE REMEDIAL INVESTIGATION REPORT:  
RIVER AREAS, SEPTEMBER, 1988

Dear Fred:

The following are comments on the River Areas RI report with exception of Section 6: Baseline Risk Assessment; those comments should be completed shortly.

<u>Page</u>	<u>Comment</u>
--	Background information that is contained in the RI Documents for the main Plant and Union Lake will not be commented on in this review. Refer to previous reviews.
1-12	The document should note that a major reason for denying the NJPDES permit for a ground water discharge is the hydraulic impact any discharge would have, regardless of quality, on the movement of contaminated groundwater and the Blackwater Branch. Also, refer to comments on first two reviews.
1-13	The figure showing the former outdoor storage areas is Figure 1-3, not Figure 1-5 as stated. It would be useful to show on Figure 1-3 the locations of any other waste pile mounds and drums, as well as the areas used to stockpile the soils removed from the manufacturing area.
1-21	In reference to the 20 mg/kg criteria, please refer to the comment in the NJDEP correspondence of September 28, 1988; comment number 6.

VIN 002 1718



Section 2

This section should include a figure showing the location/boundaries of Maurice River Township and Commercial Township with respect to the impacted rivers and the Vineland Chemical Company. There appears to be a lack of information on the Blackwater Branch & Upper Maurice River areas impacted by arsenic contamination.

2-8

There are incorrect dates, apparently, for the Captain Isaac Peterson House, the Benjamin Tomlin House, and the William Henry Phillips House.

2-10

In the determination of total and dissolved arsenic and iron Ebasco discarded the first 20 ml of filtrate. The entire contents of the filter is then analyzed. In order to calculate total arsenic, Ebasco must divide the quantity of arsenic or iron on the filter by the volume of the filtrate + 20 ml. Please inquire if Ebasco has made this calculation.

3-6

Ebasco determined a water balance for the Maurice River Watershed by estimating a ground water flow input and subtracted this value from the total river flow. The result is an estimate of surface runoff. It is not clear in the discussion how the ground water base flow input was estimated and whether this flow was verified with empirical data. Please have Ebasco explain this calculation in more detail.

3-7

Editorial comment, second paragraph. Re-write this paragraph so that the list of facts that is presented in subsequent paragraphs is properly introduced.

4-19

If TOC data is available, have Ebasco calculate Arsenic/TOC ratio for the Upper River areas to determine whether any predictive relationship exists.

5-25, 26

Ebasco concluded that the Upper River and Lake act primarily as a conduit for the transport of arsenic from the ground water at the plant site to the Lower Maurice River. Exchange processes and loads of arsenic in the sediment of the lake, Upper Maurice River, and the Blackwater Branch will cause continued elevated arsenic levels in the waters of these areas even if the remaining sources of arsenic are prevented from leaving the site. Implications of these findings are:

- a) The Lower Maurice River is the only habitat that can be protected from further arsenic loading of its sediments.
- b) Plant site source remediation will not significantly improve downstream water quality or protection of the Lower Maurice River.

5-29

Have Ebasco report the organic content of on site soils (TOC) if available. Such information may yield a more universal  $K_d$  for arsenic. If not available, TOC data should be included in future work plans.

5-37, 38

From the discussion on the impact of arsenic in the lake sediment on water quality, it becomes evident that the organic content of the sediment must be evaluated since that value determines the sediment's carrying capacity and exchange rate of arsenic. These factors govern the sediments impact on water quality.

5-50

Even though 50% of the arsenic in the sediment is unextractable, measured  $K_d$ s do not have any extraction efficiency correction, so this extractability of arsenic should not significantly effect equilibrium levels of arsenic in water and thus the arsenic impact on surface water quality.

Section 7

Treatability tests were covered in previous reviews on the Vichem Site.

7-5

There is the same mis-cite as in comment 22 on the plant site comments, that is, that the ECRA citation should be N.J.A.C. 7:26B-1.1 et seq.

8-2

The sources investigated to determine if any other arsenic discharges below Union Lake exist should be mentioned here.

8-6

Have Ebasco delete this paragraph since no 2,4-D was manufactured at the Vichem site (see letter from F. Reisenburger (Vichem) to J.Marshall, Emergency Remedial Response Division, EPA, June 24, 1987).

General

A basic understanding of arsenic sorption/desorption relationships in the rivers and lake is needed to predict how changes in the unremediated discharges of

arsenic from in the study site would have on any reservoir of contamination, such as soil, and ground water. For example, extrapolation of data at the end of the curve in figure 5-4, page 5-14, suggests that in 1985-86 acceptable water quality should have occurred in the Blackwater Branch below Mill Road. Results from Figure 5-5 indicate that this was the case. Rates of flushing such as those in figure 5-5 need to be compared to relative risks and the timeframe of implementation of remediation so that an effective plan can be developed for the VICHEM site that would best serve the public interest. For instance, in cases where natural flushing will reduce contamination below the life-time acceptable risk levels in relatively short time periods 5-10 years and remediation implementation will take 3-5 years, it may be prudent not to invest in a remediation scheme for that segment of the site.

To determine sorption/desorption rates of arsenic from sediments, organic carbon and possibly EH need to be extensively measured throughout the river and lake areas. These results can then be used in an appropriate model to predict changes in sediment, surface and ground water contamination. Whether this can be relegated to the design portion of the project it is not known. However, EBASCO and EPA, may be able to focus on a limited set of alternatives based on the results of such a model.

Should you have any questions, please call me at (609) 984-0980.

Very truly yours,



Thomas J. Cozzi,  
Site Manager  
Bureau of Site Management

HS179:ms

- c. A. Verma, BSM
- DAG R. Engel
- A. Marinucci, BEERA
- J. Monroe, DWR
- I. Kropp, Superfund Coordinator
- C. McCarty, BCR

VIN 002 1721

L